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A study of the effect of different shade levels on the growth and development of threadstem carpet weed (*Mollugo cerviana*)

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Light regulates plant growth and the development and weed/crop interactions. Effect of different shade levels on the growth and development of the threadstem carpet weed (*Mollugo cerviana*) was studied to identify the level of shade tolerance of this weed. This study was conducted at the crop farm of the Faculty of Agriculture, Eastern University, Sri Lanka during February to April 2011. The soil was sandy regosol and the average temperature was around 31 ± 2 °C during the experimental period. The experiment was arranged in a completely randomized design. The treatments were as follows: Treatment-1 (T_1) open field (0% light reduction), T_2 - 50% shade level, T_3 – 70% shade level and T_4 – 80% shade level. The threadstem carpet weed was established via seeds and grown on soil under four different shade levels. Measurements viz. plant height and biomass were taken three months after planting. The data were analyzed statistically using analysis of variance (ANOVA). Mean separation was done by Duncan's Multiple Range Test (DMRT).

Significant differences ($p<0.05$) were observed between the treatments tested. Plant height and biomass decreased with increasing shade levels. The Threadstem carpet weed has a C_3 - C_4 intermediate photosynthetic machinery. It requires a high intensity of solar radiation for maximum photosynthesis. Reduction in light levels decreases the rate of photosynthesis and dry matter accumulation. Hence, increasing shade levels suppresses the growth and development of the threadstem carpet weed. From this study it could be concluded that the level of shade tolerance of threadstem carpet weed is low. Hence, interference of this weed in agricultural fields can be minimized by reducing the amount of solar radiation which reaches the soil. This is possible through crop management practices such as close spacing, use of varieties with a large leaf area and early establishment and intercropping. Further, these practices could save money, time and the environment.

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